Weather

A MONTHLY MAGAZINE FOR ALL INTERESTED IN METEOROLOGY

Vol. 29

1974

Published by the

ROYAL METEOROLOGICAL SOCIETY

Cromwell House, High Street, Bracknell, Berks. RG12 1DP

D

PRINTED IN GREAT BRITAIN BY BRADLEYS, READING AND LONDON

CONTENTS

COVER PHOTOGRAPHS

January	An air lightning discharge photographed with a 220° all-sky camera pointing vertically, E. P. KRIDER
February	Sunset at Gan, Maldive Islands, October 1968, D. E. WARNER
March	Stratocumulus approaching from south-west, 6.05 pm 13 October 1966, taken in Bristol looking north, C. D. CATT
April	April showers: View looking north from Cley, Norfolk at 1300 hrs on 9 April 1973. Deep cumulonimbus forms over the sea in unstable polar air, J. R. MILFORD
May	Cumulus over Oklahoma, *by courtesy of 9th Weather Wing, 58th Weather Reconnaissance Squadron, USAF; and National Severe Storms Laboratory, N.O.A.A.*
June	Time sequence of four photographs of a colour TV showing distribution of rain ahead of a warm front on 14 February 1974 (*Crown copyright reproduced by permission of the Controller, HMSO*)
July	Cumulus congestus, J. H. WILLIAMS
August	Whirlwind over a brush fire, S. B. IDSO
September	Overnight fog formed in Sydney Harbour, J. HALLETT
October	November sunrise over Oxshott Woods, Surrey, J. H. WILLIAMS
November	Early morning mist at Harlow in Essex, D. E. WARNER
December	Orographic middle and high cloud and drifting snow, Prince Charles Mountains, MacRobertson Land, Antarctica, 72° 44′S, 64° 23′E at 11 pm local time 28 December 1971, M. BETTS

	Pages		*Pages*
JANUARY	1–42	JULY	241–277
FEBRUARY	43–80	AUGUST	279–317
MARCH	81–120	SEPTEMBER	319–356
APRIL	121–159	OCTOBER	357–393
MAY	161–199	NOVEMBER	395–434
JUNE	201–240	DECEMBER	436–467

INDEX

Titles in italics denote book reviews

Author's name in CAPITALS

*denotes Letters to the Editor

ACKLEY, S. F. and K. ITAGAKI, The crystal structure of a natural freezing rain accretion, 189

Air and sea surface temperatures over the North Atlantic, The downward trend of, 451

Air current of the western Indian Ocean during the Northern Summer, The low-level cross-equatorial, 411

Amateur meteorologist? Are you a good, 457

Amateurs, More thoughts on meteorology for, 223

American Arctic, A satellite view of weather systems over the North, 369

Annual fluctuations of rainfall at Oxford since 1815, Monthly, seasonal and, 2

Arc, Double tangent*, 276

Arctic, A satellite view of weather systems over the North American, 369

Asian summer monsoon, A satellite view of the south, 82

Association of British climatologists, Meeting report, 2 March 1974, 237

ATKINSON, B. W. and P. A. SMITHSON, Rain pulses in a warm sector, 44

Atmospheric boundary layer experiment, The 1973 Minnesota, 309

Atmospheric clarity, Decrease of extreme*, 316

Atmospheric mystery*, 356

Atmospheric pressures, Extremely high*, 315

Ball lightning*, 77, 314

BARRINGTON, C. R., Prediction of warm days in July and August in London area*, 117

BARRY, R. G. and A. H. PERRY, *Synoptic climatology – methods and applications*, 195

BAYLIS, P. E. and R. J. H. BRUSH, Pictures from NOAA satellites, 217

BEER, T., A tropical Mother-of-Pearl cloud, 271

BELL, E. J., Meteorological broadcasts*, 78

BELL, G. J., Father Ernesto Gherzi, S.J., 1886–1973, an appreciation, 184

BIGG, E. K., A glory in the stratosphere, 328
BLACKMORE, R. S. and E. DERBYSHIRE, A portable weather station for expedition use, 167
BODECHTEL, J. and H. G. GIERLOFF-EMDEN, *The Earth from space*, 431
BONACINA, L. C. W., How extreme spells of weather could arise*, 433
———, Magnificent storm clouds*, 77
———, Weather in Cols*, 158
BRAMWELL, H. D., Infra-red pictures from NOAA-2*, 42
BRANDLI, H. W. and M. W. MAIER, Real-time satellite photographs for Skylab support, 95
BRIGHT, W. J., Mountain weather course: 15–22 August, 39
Britain, Some synoptic aspects of hot weather in, 358
Broadcasts, Meteorological*, 78
BROWNING, K. A. and B. C. TAYLOR, Towards an automated weather radar network, 202
Bruckner cycle, The*, 40, 313
BRUSH, R. J. H. and P. E. BAYLIS, Pictures from NOAA satellites, 217
BURNS, F., Strange cloud? – photograph, 265

Canada, Climate and permafrost in, 298
CATT, C. D., Cumulus, altocumulus and cirrocumulus – photograph, 266
CLARKE, A., Windmills – photograph, 424
Climate and permafrost in Canada 298
Climate, weather and human food systems – A world view, 242
Climatology, An application of phenological data to historical, 320
Clouds, Magnificent storm*, 77
COCHRANE, J., Meteorological observations in Hambledon Vineyard in 1972, 144
Cols, Weather in*, 158
Contrails as an indication of horizontal wind-shear near a jet-stream, 387
CRADDOCK, J. M., More thoughts on meteorology for amateurs, 223
———, Phenological indicators and past climates, 332
CREW, E. W., Atmospheric mystery*, 356
Crystal structure of a natural freezing rain accretion, The 189
Cumulonimbus, Photograph by R. T. RYAH, 27
Cumulonimbus Tops; Tufts, Details in, 381
Cumulus, altocumulus and cirrocumulus, photograph by C. D. CATT, 266
Cumulus cloud from a stubble fire, 102
Cyclone eye, Across the, 53
Cyclone frequencies, Some observations of global trends in tropical, 267

DALTON, G. E., The effect of weather on the choice and operation of harvesting machinery in the United Kingdom, 252
DEAR, R. C., London's heat island*, 41
Dendroclimatology, A millenium of West European climate – a cu-sum look at, 162
Depression, An intense April, 426
DERBYSHIRE, E. and R. S. BLACKMORE, A portable weather station for expedition use, 167
Desert rainstorm at Kufra, Libya, An exceptional, 64
DESHPANDE, D. V., Across the cyclone eye, 53
DOUGLAS, C. K. M., Decrease of extreme atmospheric clarity, 316
Dry months*, 197
DUCKHAM, A. N., Climate, weather and human food systems – A world view, 242

East African rainfall: Central tendencies and skewness as synoptic indicators, 345
Eighteenth-century Meteorological Society, The Societas Meteorologica Palatina: An, 416
England, Heavy rainfall over central northern, 17
European Climate – a cu-sum look at dendroclimatology, A millenium of West, 162
European weather diary?, The oldest, 233
Europe, Canicule over*, 118
EVANS, W. and B. A. HALL, Contrails as an indication of horizontal windshear near a jet-stream, 387
Extreme spells of weather could arise, How*, 433

FINCH, C. R., Extremely high atmospheric pressures*, 315
FINDLATER, J., The low-level cross-equatorial air current of the Western Indian Ocean during the Northern Summer, 411
Forecaster's nightmare – photograph, 343
Foundation stone ceremony, Royal Meteorological Society, 459
Freezing phenomenon, An unusual*, 432

Gales of 2 April 1973, The*, 196
Gherzi, S. J., 1886–1973 an appreciation, Father Ernesto, 184
GIERLOFF-EMDEN, H. G. and J. BODECHTEL, *The Earth from space*, 431
Glaciers, East African*, 197
Global trends in tropical cyclone frequencies, Some observations of, 267
GORDON, A. H., High temperatures in London*, 240
———, Hot spells or heat waves*, 316
———, The long range weather forecast, correction, 356
GRAY, BARBARA M., Early Japanese winter temperatures, 103
GREEN, F. H. W., The green flash*, 118
Green flash, The*, 118

HAGGIS, M. J., Wave clouds – photograph, 405
Hail in Rhodesia and a local hail index, The incidence of, 396
HALL, B. A. and W. EVANS, Contrails as an indication of horizontal windshear near a jet-stream, 387
Halo display in Indiana 10 January 1973*, 277

Haloes in divergent light, Experiments on horizontal, 148
Halo, Note on a circumscribed, 345
Halo phenomena*, 158
Halo phenomenon at Swift Current, Unusual, 113
HALSTEAD, C. A., Soil freeze-thaw recording in the Southern Uplands of Scotland, 261
Hambledon Vineyard in 1972, Meteorological observations in, 144
HAMILTON, M. G., A satellite view of the south Asian summer monsoon, 82
Harvesting machinery in the United Kingdom, The effect of weather on the choice and operation of, 252
HARWOOD, R. S. and D. E. PEDGLEY, Summer meeting 1973, Royal Meteorological Society, 33
HAUGEN, D. A., C. J. READINGS and J. C. KAIMAL, The 1973 Minnesota atmospheric boundary layer experiment, 309
HEIGHES, J. M., Unusually low daytime illumination*, 158
HIGGINSON, J. J., J. D. ROHRBOUGH and J. WILLIAMS, *Sea and air; the marine environment*, Second edition, 115
HIGH, C. and J. OGUNTOYINBO, Ground level rain-gauge catch at Ibadan, Nigeria, 384
HILLS, R. C., East African rainfall: Central tendencies and skewness as synoptic indicators, 345
HOBBS, J. E., A complex intertropical convergence zone – some examples from the Indian Ocean, 122
HORN, D. J., Thunder and hail in June at Plymouth*, 313
HOSKING, K., Easter weather – Ryde 1918–74*, 315
———, Prediction of warm days in July and August*, 240
Hot spells, 464
Hot spells or heat waves?*, 316
Hottest days in southern England*, 78
Hot-tower precipitation*, 196
Hot weather in Britain, Some synoptic aspects of, 358
HOUGHTON, D., *The weather men*, 312
HUNT, M., Observations and instruments, 465

Iceman disappeareth?, The*, 79
IDSO, S. B., Tornadic vortices spawned by a desert brush fire, 280
Illumination, Unusually low daytime*, 158
Indian Ocean, A complex intertropical convergence zone – some examples from the, 122
Indian ocean during the Northern Summer, The low-level cross-equatorial air current of the western, 411
Infra-red pictures from NOAA-2*, 42
Intertropical convergence zone – some examples from the Indian Ocean, A complex, 122
IRVINE, S. G., A Shetland thunderstorm*, 238
———, Mother-of-pearl clouds*, 276
———, Shetland's severe autumn of 1973, 193
———, The iceman disappeareth?*, 79
———, The Shetland storm of 13 December 1972*, 78
ITAGAKI, K. and S. F. ACKLEY, The crystal structure of a natural freezing rain accretion, 189

JACKSON, M. C., Largest two-hour falls of rain in the British Isles, 71
Japanese winter temperatures, Early, 103
Japanese winter temperatures, Early*, 356

KAIMAL, J. C., C. J. READINGS and D. A. HAUGEN, The 1973 Minnesota atmospheric boundary layer experiment, 309
KELWAY, P. S., An automated weather radar network*, 463
KEMP, B., Radar observation of a secondary depression approaching Wales, 272
Kew, Sunshine at*, 117
KINGTON, J. A., An application of phenological data to historical climatology, 320
———, The Societas Meteorologica Palatina: An eighteenth-century Meteorological Society, 416
KRIDER, E. P., An unusual photograph of an air lightning discharge, 24

LAMB, H. H., *The seasonal progression of the general atmospheric circulation affecting the North Atlantic and Europe*, 275
LAMBERT, D., Low cost remote thermometry*, 116
LAWRENCE, A. and S. LOVE, Mathematics and physics in the open air: 25 July–1 August, Field Study Courses in 1973, 38
LEE, M. F., Cumulus cloud from a stubble fire, 102
LEGG, B. J. and R. D. PREW, An unusual freezing phenomenon, 217
LESLIE, D. C., *Developments in the theory of turbulence*, 274
Lightning, Ball,* 77
Lightning discharge, An unusual photograph of an air, 24
LOEWE, F., The Bruckner cycle*, 313
London's heat island*, 41, 238
LONG, C., The oldest European weather diary?, 233
LOVE, S. and A. LAWRENCE, Mathematics and physics in the open air: 25 July–1 August, Field Study courses in 1973, 38
LUDLAM, F. H., Details in cumulonimbus tops: Tufts, 381
LYALL, I. T., Next Winter?*, 390
———, Prediction of warm days in July and August, 77
———, Some synoptic aspects of hot weather in Britain, 358
———, The Shetland thunderstorm 16 August 1973, 392
———, Weather on Mars, 28
———, Weather on Mars, correction, 356

MAIER, M. W. and H. W. BRANDLI, Real-time satellite photographs for Skylab support, 95
Mamma at Bracknell – photograph, 423
Man and his problem, A, 456
Mars, Weather on, 28
MARTIN, R., Air pollution in south-east Wales*, 117
Mathematics and physics in the open air, 25 July–1 August 1973, Field Study Courses in 1973, 38
MATTSSON, J. O., Experiments on horizontal haloes in divergent light, 148
MCCLAIN, E. PAUL and P. KRISHNA RAO, Images from the NOAA-3 very high resolution radiometer over the North Sea and adjoining countries, 436
MCNEILL, I., Sea fog at Ballycastle, Co. Antrim – photographs, 406
———, The first warm spell of summer*, 240
MEADEN, G. T., Appeasing the Rain-gods*, 41
———, Canicule over Europe*, 118
Meteorological broadcasts*, 78
MEYER, J. V., Early Japanese winter temperatures*, 356
MILDREN, M. J., London's heat island*, 238
MILTON, D., Some observations of global trends in tropical cyclone frequencies, 267
Minnesota atmospheric boundary layer experiment, The 1973, 309
Monsoon, A satellite view of the south Asian summer, 82
Monsoon rainfall in Nepal, Heavy, 443
Monthly, seasonal and annual fluctuations of rainfall at Oxford since 1815, 2
Mother-of-pearl cloud, A tropical, 271
Mother-of-pearl clouds*, 276
Mountain weather course 15–22 August, 39
Mountain weather in Snowdonia, Field studies of, 284

NAYAVA, J. L., Heavy monsoon rainfall in Nepal, 443
Nepal, Heavy monsoon rainfall in, 443
News, 119, 199, 317, 467
NICHOLSON, G., Rainfall on Thursdays*, 356
Nigeria, Ground level rain-gauge catch at Ibadan, 384
NOAA-3 very high resolution radiometer over the North Sea and adjoining countries, Images from the, 436
Noctilucent clouds*, 432
NORGATE, T. B., Rainfall on Thursdays*, 197
North Atlantic, The downward trend of air and sea surface temperatures, over the, 451
North Sea and adjoining countries, Images from the NOAA-3 very high resolution radiometer over the, 436

Observations and instruments, 465
Observations in Hambledon Vineyard in 1972, Meteorological, 144
OGUNTOYINBO, J. and C. HIGH, Ground level rain-gauge catch at Ibadan, Nigeria, 384
OLDSCHOOL, S. R., The first warm spell of summer at Kew*, 118
OLIVER, H. R., The gales of 2 April 1973*, 196
ORD, J. E., Ball lightning*, 77
Oxford since 1815, Monthly, seasonal and annual fluctuations of rainfall at, 2

PAINTER, H. E., Sunshine at Kew*, 117
PARSONS, F. J., Summer Radiation*, 198
PEARSON, M. G., Noctilucent clouds*, 432
PEDGLEY, D. E., An exceptional desert rainstorm at Kufra, Libya, 64
———, Field studies of mountain weather in Snowdonia, 284
PEDGLEY, D. E. and R. S. HARWOOD, Summer meeting 1973, Royal Meteorological Society, 33
Permafrost in Canada, Climate and, 298
PERRY, A. H. and R. G. BARRY, *Synoptic climatology – methods and applications*, 195
PERRY, A. H., The anatomy of summer 1973*, 76
———, The downward trend of air and sea surface temperatures over the North Atlantic, 451
PETERSON, R. E., Halo display in Indiana 10 January 1973*, 277
Phenological data to historical climatology, An application of, 320
Phenological indicators and past climates, 332
Phenomenon, An unusual freezing, 217
PIDDOCKE, B. G., Ball lightning*, 314
PILSBURY, R. K., Halo phenomena*, 158
Pollution in south-east Wales, Air*, 117
POOK, C. A., Heavy thunderstorms over Bristol*, 391
POOK, C., Tornadoes in Britain*, 118
POTTS, E. B., Heavy weather down on the farm*, 314
Prediction of warm days in July and August*, 77
Prediction of warm days in July and August in London area*, 117
PREW, R. D. and B. J. LEGG, An unusual freezing phenomenon, 217

Radar and rain – observers please!*, 313
Radar network, An automated weather*, 463
Radar network, Towards an automated weather, 202
Radar observation of a secondary depression approaching Wales, 272
Radiation in London, Summer*, 41
Radiation, Summer*, 198
Rain accretion, The crystal structure of a natural freezing, 189
Rainfall at Oxford since 1815, Monthly, seasonal and annual fluctuations of, 2
Rainfall: Central tendencies and skewness as synoptic indicators, East African, 345

Rainfall on Thursdays*, 197, 356
Rainfall over central northern England, Heavy, 17
Rain-gauge catch at Ibadan, Nigeria, Ground level, 384
Rain-gods, Appeasing the*, 41
Rain in the British Isles, Largest two-hour falls of, 71
Rain pulses in a warm sector, 44
Rainstorm at Kufra, Libya, An exceptional desert, 64
RAO, P. KRISHNA and E. PAUL MCCLAIN, Images from the NOAA-3 very high resolution radiometer over the North Sea and adjoining countries, 436
READINGS, C. J., D. A. HAUGEN and J. C. KAIMAL, The 1973 Minnesota atmospheric boundary layer experiment, 309
Reviews:
Developments in the theory of turbulence, D. C. LESLIE, 274
Environment and plant life, S. A. SEARLE, 432
Pilots' weather, A. WELCH, 275
Sea and air: the marine environment, Second edition, J. WILLIAMS, J. J. HIGGINSON and J D ROHRBOUGH, 115
Synoptic climatology – methods and applications, R. G. BARRY and A. H. PERRY, 195
The Earth from Space, J. BODECHTEL and H. G. GIERLOFF-EMDEN, 431
The seasonal progression of the general atmospheric circulation affecting the North Atlantic and Europe, H. H. LAMB, 275
The seasons; rhythms of life, cycles of change, A. SMITH, 156
The weather men, D. HOUGHTON, 312
Weather forecasting for agriculture and industry, edited by J. A. TAYLOR, 390
Wind and sailing boats, A. WATTS, 157
REYNOLDS, G., Weather, waves and North Sea oil, Royal Meteorological Society meeting, 36
Rhodesia and a local hail index, The incidence of hail in, 396
RICHARDS, P. and M. W. STUBBS, An intense April depression, 426
RIEHL, H., Hot-tower precipitation*, 196
Rime – photograph, F. CORDERY, 182
ROBERTSON, G. W., Unusual halo phenomenon at Swift Current, 113
ROBERTSON, J. M., A man and his problem, 456
ROHRBOUGH, J. D., J. WILLIAMS and J. J. HIGGINSON, *Sea and air: the marine environment*, Second edition, 115
RYAH, R. T., Cumulonimbus – photograph, 27
Ryde 1918–74, Easter weather*, 315

SANDON, F., A millenium of West European climate – a cu-sum look at dendro-climatology, 162
Satellite photographs for Skylab support, Real-time, 95
Satellites, Pictures from NOAA, 217
Satellite view of the south Asian summer monsoon, A, 82
Satellite view of weather systems over the North American Arctic, A, 369
Scotland, Soil freeze-thaw recording in the Southern Uplands of, 261
Scottish snowbeds in summer 1973, 151
SCUTT, R., An unusual freezing phenomenon*, 432
———, Next winter?*, 239
Sea fog at Ballycastle, Co. Antrim – photographs, 406
SEARLE, S. A., *Environment and plant life*, 432
Seasonal and annual fluctuations of rainfall at Oxford since 1815, Monthly, 2
Sea surface temperatures over the North Atlantic, The downward trend of air and, 451
Shetland's severe autumn of 1973, 193
Shetland storm of 13 December 1972, The*, 78
Shetland thunderstorm, A*, 238
Shetland thunderstorm of 16 August 1973, The, 392
Shower over the English Channel, photograph by J. H. WILLIAMS, 266. See correction, 433
Skylab support, Real-time satellite photographs for, 95
SMITH, A., *The seasons: rhythms of life, cycles of change*, 156
SMITH, C. G., Monthly, seasonal and annual fluctuations of rainfall at Oxford since 1815, 2
SMITH, W. M., Hottest days in southern England*, 78
SMITHSON, P. A., Heavy rainfall over central northern England, 17
SMITHSON, P. A. and B. W. ATKINSON, Rain pulses in a warm sector, 44
Snowbeds in summer 1973, Scottish, 151
Snowdonia, Field studies of mountain weather in, 284
Snowfall, Discussion Meeting 6 October 1973 Report, 73
Soil freeze–thaw recording in the Southern Uplands of Scotland, 261
SPINK, P. C., East African glaciers*, 197
———, Scottish snowbeds in summer 1973, 151
———, Summer radiation in London*, 41
STANFORD, J. L., Possible long-term variations in stratospheric water-vapour content, 107
Storm clouds, Magnificent*, 77
Strange cloud?, photograph by F. BURNS, 265
STRANZ, D., Next Winter?*, 391
Stratosphere, A glory in the, 328
Stratospheric water-vapour content, Possible long-term variations in, 107
STRETEN, N. A., A satellite view of weather systems over the North American Arctic, 369
STUBBS, M. W. and P. RICHARDS, An intense April depression, 426
STYLES, K. F., Forecaster's nightmare – photograph, 343
Summer at Kew, The first warm spell of*, 118

Summer 1973, The anatomy of*, 76
Summer meeting 1973, Royal Meteorological Society, 33
Sunshine at Kew*, 117
SUTTIE, T. K., Are you a good amateur meteorologist? 457
Synoptic aspects of hot weather in Britain, Some, 358

TAGG, J. R., Tornado at Cranfield, 26 June 1973, 60
TAYLOR, B. C., An automated weather radar network*, 463
TAYLOR, B. C. and K. A. BROWNING, Towards an automated weather radar network, 202
TAYLOR, J. A., *Weather forecasting for agriculture and industry*, 390
Temperatures, Early Japanese winter, 103
Temperatures in London, High*, 240
The guard rails of the Snowdon railway – photograph, R. SHORTER, 182
The long range weather forecast, correction, 356
Thermometry, Low cost remote*, 116
THOMAS, J. P., Hot spells, 464
THOMPSON, A. H., Water bows: white bows and red bows, 178
THOMPSON, R. D., Climate and permafrost in Canada, 298
Thunder and hail in June at Plymouth*, 313
Thunderstorms over Bristol, Heavy*, 391
Tornadic vortices spawned by a desert brush fire, 280
Tornado at Cranfield, 26 June 1973, 60
Tornadoes in Britain*, 118
TORRANCE, J. D., The incidence of hail in Rhodesia and a local hail index, 396
TRICKER, R. A. R., Double tangent arc*, 276
———, Note on a circumscribed halo, 345

VERYARD, R. G., The Bruckner cycle*, 40
Vortices spawned by a desert brush fire, Tornadic, 280

Wales, Air pollution in south-east, 117
Wales, Radar observation of a secondary depression approaching, 272
Warm days in July and August in London area, Prediction of*, 117
Warm days in July and August, Prediction of*, 77, 240
Warm spell of summer at Kew, First*, 118
Warm spell of summer, The first*, 240
WARNER, C., Radar and rain – observers please!*, 313
Water bows: white bows and red bows, 178
Water-vapour content, Possible long-term variations in stratospheric, 107
WATTS, A., *Wind and sailing boats*, 157
Wave clouds – photograph, 405
Weather and human food systems – A world view, 242
Weather and sailing – Field study course in 1974, 430
Weather down on the farm, Heavy*, 314
Weather on Mars, Correction, 356
Weather on the choice and operation of harvesting machinery in the United Kingdom, The effect of, 252
Weather station for expedition use, A portable, 167
Weather, waves and North Sea oil, Royal Meteorological Society meeting, 36
WELCH, A., *Pilots' weather*, 275
WILLIAMS, J., J. J. HIGGINSON and J. D. ROHRBOUGH, *Sea and air: the marine environment*, Second edition, 115
WILLIAMS, J. H., Shower over the English Channel – photograph, 266
WILLIS, G. A., Dry months*, 197
Windmills – photographs, 424
Winter, Next*, 239, 390